HP A-MSR20-1x Series

Data sheet

Product overview

The HP A-MSR20-1x Series is a set of full-featured, economical routers designed for converged WAN, wired, and wireless LAN traffic at enterprise branch locations and small to medium-sized businesses. They deliver high performance while reducing complexity, simplifying management, and increasing control. These routers enable an agile and flexible network infrastructure that can quickly adapt to changing business requirements, while delivering integrated, concurrent services on a single, easy-to-manage platform.

Key features

- WAN, LAN, wireless, voice, firewall all-in-one box
- Compact design for both desktop and rack mount
- Both fixed-port and modular design
- Embedded encryption, firewall, security feature
- Unified and ease management

Features and benefits

Quality of Service (QoS)

- **Traffic policing:** supports Committed Access Rate (CAR) and line rate
- **Congestion management:** supports FIFO, PQ, CQ, WFQ, CBQ, and RTPQ
- **Congestion avoidance:** weighted Random Early Detection (WRED)/RED
- **Other QoS technologies:** support traffic shaping, FR QoS, MPLS QoS, and MP QoS/LFI

Management

- **Industry-standard CLI with a hierarchical structure:** reduces training time and expenses, and increases productivity in multivendor installations
- **Management security:** multiple privilege levels, with password protection, restrict access to critical configuration commands; ACLs provide telnet and SNMP access; local and remote syslog capability allow logging of all access
- **SNMPv1, v2, and v3:** provide complete support of SNMP; SNMPv3 supports increased security using encryption; provide full support of industry-standard MIBs plus private MIB extensions
- **Remote monitoring (RMON):** uses standard SNMP to monitor essential network functions; supports events, alarm, history, and statistics group plus a private alarm extension group
- **FTP, TFTP, and SFTP support:** File Transfer Protocol allows bi-directional transfers over a TCP/IP network and is used for configuration updates; Trivial FTP is a simpler method using UDP
- **Debug and sampler utility:** supports ping and traceroute for both IPv4 and IPv6
- **Network Time Protocol (NTP):** synchronizes timekeeping among distributed time servers and clients; keeps consistent timekeeping among all clock-dependent devices within the network so that the devices can provide diverse applications based on the consistent time
- **Info center:** provides a central information center for system and network information; aggregates all logs, traps, and debugging information generated by the system and maintains them in order of severity; outputs the network information to multiple channels based on user-defined rules
- **Management interface control:** provides management access through modem port and terminal interface; provides access through terminal interface, telnet, or SSH
- **Network Quality Analyzer (NQA):** analyzes network performance and service quality by sending test packets, and provides network performance and service quality parameters such as jitter, TCP, or FTP connection delays; allows network manager to determine overall network performance and diagnose and locate network congestion points or failures

Connectivity

- **Packet storm protection:** protects against broadcast, multicast, or unicast storms with user-defined thresholds
- **Loopback:** supports internal loopback testing for maintenance purposes and an increase in availability; loopback detection protects against incorrect cabling or network configurations and can be enabled on a per-port or per-VLAN basis for added flexibility
- **3G access support:** allows use of SIC 3G module for high reliability; supports popular USB 3G modem
- **Flexible port selection:** provides combination of fiber and copper interface modules, 100/1000Base-X auto-speed selection, and 10/100/1000Base-T auto-speed detection plus auto duplex and MDI/MDI-X
- **Multiple WAN interfaces:** provide a traditional link with Serial, E1/T1, ADSL, and ISDN/AM backup; provide high-density Ethernet access with WAN Fast Ethernet/Gigabit Ethernet and LAN 4- and 9-port Fast Ethernet; provide mobility access with 11g/n Wi-Fi and 3G
- **High-density port connectivity:** 1 interface module slot and up to 10 Fast Ethernet ports

Performance

- **Powerful encryption capacity:** includes embedded hardware encryption accelerator to improve encryption performance
- **Flexible chassis selection:** offers a choice 12 routers; meets different requirements on enterprise branches
- **Excellent forwarding performance:** provides forwarding performance up to 160 Kpps; meets today's and future demand for an enterprise organization's bandwidth-intensive applications

Resiliency and high availability

- **Virtual Router Redundancy Protocol (VRRP):** allows a group of routers to dynamically back each other up to create highly available routed environments
- **Backup Centre:** functions as a part of the management and backup function to provide backup for interfaces on your device; delivers reliability by switching traffic over to a backup interface when the primary one fails

Layer 2 switching

- **Spanning Tree:** fully supports standard IEEE 802.1D Spanning Tree Protocol, IEEE 802.1w Rapid Spanning Tree Protocol for faster convergence, and IEEE 802.1s Multiple Spanning Tree Protocol
- **IGMP and MLD snooping:** effectively control and manage the flooding of multicast packets in a Layer 2 network
- **Port mirroring:** duplicates port traffic (ingress and egress) to a local or remote monitoring port
- **VLANs:** support IEEE 802.1Q-based VLANs

Layer 3 services

- **Address Resolution Protocol (ARP):** determines the MAC address of another IP host in the same subnet; supports static ARPs; gratuitous ARP allows detection of duplicate IP addresses; proxy ARP allows normal ARP operation between subnets or when subnets are separated by a Layer 2 network
- **User Datagram Protocol (UDP) helper:** redirects UDP broadcasts to specific IP subnets to prevent server spoofing
- **Dynamic Host Configuration Protocol (DHCP):** simplifies the management of large IP networks and supports client and server; DHCP Relay enables DHCP operation across subnets

Layer 3 routing

- **Static IPv4 routing:** provides simple, manually configured IPv4 routing
- **Routing Information Protocol (RIP):** uses a distance vector algorithm with UDP packets for route determination; supports RIPv1 and RIPv2 routing; includes loop protection
- **OSPF:** Interior Gateway Protocol (IGP) using link-state protocol for faster convergence; supports ECMP, NSSA, and MD5 authentication for increased security and graceful restart for faster failure recovery
- **Border Gateway Protocol 4 (BGP-4):** Exterior Gateway Protocol (EGP) with path vector protocol uses TCP for enhanced reliability for the route discovery process, reduces bandwidth consumption by advertising only incremental updates, and supports extensive policies for increased flexibility, as well as scales to very large networks
- **Intermediate system to intermediate system (IS-IS):** Interior Gateway Protocol (IGP) using path-vector protocol, which is defined by the ISO organization for IS-IS routing and extended by IETF RFC 1195 to operate in both TCP/IP and the OSI reference model (Integrated IS-IS)
- **Static IPv6 routing:** provides simple, manually configured IPv6 routing
- **Dual stack:** maintains separate stacks for IPv4 and IPv6 to ease transition from an IPv4-only network to an IPv6-only network design
- **Routing Information Protocol next generation (RIPng):** extends RIPv2 to support IPv6 addressing
- **OSPFv3:** extends OSPFv2 to support IPv6 addressing
- **BGP+:** extends BGP-4 to support Multiprotocol BGP (MBGP), including support for IPv6 addressing
- **IS-IS for IPv6:** extends IS-IS to support IPv6 addressing
- **IPv6 tunneling:** is an important element for the transition from IPv4 to IPv6; allows IPv6 packets to traverse IPv4-only networks by encapsulating the IPv6 packet into a standard IPv4 packet; supports manually configured, 6to4, and Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) tunnels
- **Multiprotocol Label Switching (MPLS):** uses BGP to advertise routes across Label Switching Paths (LSPs), but uses simple labels to forward packets from any Layer 2 or Layer 3 protocol, thus reducing complexity and increasing performance; supports graceful restart for reduced failure impact; supports LSP tunneling and multilevel stacks
- **Multiprotocol Label Switching (MPLS) Layer 3 VPN:** allows Layer 3 VPNs across a provider network; uses MP-BGP to establish private routes for increased security; supports RFC 2547bis multiple autonomous system VPNs for added flexibility

- **Multiprotocol Label Switching (MPLS) Layer 2 VPN:** establishes simple Layer 2 point-to-point VPNs across a provider network using only MPLS LDPs; requires no routing and therefore decreases complexity, increases performance, and allows VPNs of non-routable protocols; uses no routing information for increased security; supports Circuit Cross Connect (CCC), Static Virtual Circuits (SVCs), Martini draft, and Kompella-draft technologies
- **Policy routing:** allows custom filters for increased performance and security; supports ACLs, IP prefix, AS paths, community lists, and aggregate policies

Security

- **Access control list (ACL):** supports powerful ACLs for both IPv4 and IPv6; ACLs are used for filtering traffic to prevent illegal users from accessing the network, or for controlling network traffic to save resources; rules can either deny or permit traffic to be forwarded; rules can be based on a Layer 2 header or a Layer 3 protocol header; rules can be set to operate on specific dates or times
- **TACACS+:** is an authentication tool using TCP with encryption of the full authentication request that provides added security
- **MAC authentication:** provides simple authentication based on a user's MAC address; supports local or RADIUS-based authentication
- **Network login:** standard IEEE 802.1x allows authentication of multiple users per port
- **RADIUS:** eases security access administration by using a password authentication server
- **Network address translation (NAT):** supports one-to-one NAT, many-to-many NAT, and NAT control, enabling NAPT to support multiple connections; supports backlist in NAT/NAPT, a limit on the number of connections, session log, and multi-instance
- **Secure Shell (SSHv2):** uses external servers to securely login into a remote device or securely login into MSR from a remote location; with authentication and encryption, it protects against IP spoofing and plain text password interception; increases the security of SFTP transfers
- **Unicast Reverse Path Forwarding (URPF):** allows normal packets to be forwarded correctly, but discards the attaching packet due to lack of reverse path route or incorrect inbound interface; prevents source spoofing and distributed attacks

Convergence

- **Internet Group Management Protocol (IGMP):** is used by IP hosts to establish and maintain multicast groups; supports v1, v2, and v3; utilizes Any-Source Multicast (ASM) or Source-Specific Multicast (SSM) to manage IPv4 multicast networks
- **Protocol Independent Multicast (PIM):** is used for IPv4 and IPv6 multicast applications; supports PIM dense mode (PIM-DM), sparse mode (PIM-SM), and source-specific mode (PIM-SSM)
- **Multicast Source Discovery Protocol (MSDP):** is used for inter-domain multicast applications, allowing multiple PIM-SM domains to interoperate
- **Multicast Border Gateway Protocol (MBGP):** allows multicast traffic to be forwarded across BGP networks, separate from unicast traffic

Integration

- **Embedded NetStream:** local and global server load balancing module improves traffic distribution using powerful scheduling algorithms, including Layer 4 to 7 services; monitors the health status of servers and firewalls
- **Embedded VPN firewall:** provides enhanced stateful packet inspection and filtering; provides advanced VPN services with Triple DES (3DES) and Advanced Encryption Standard (AES) encryption at high performance and low latency, Web content filtering, and application prioritization and enhancement

Additional information

- **OPEX savings:** a common operating system simplifies and streamlines deployment, management, and training, thereby cutting costs, as well as reducing the chance for human error associated with having to manage multiple operating systems across different platforms and network layers
- **High reliability:** provides a state-of-the-art unified code base
- **Faster time to market:** engineering efficiencies allow new and custom features to be brought rapidly to the market with better initial and ongoing stability
- **Green initiative support:** provides support for RoHS and WEEE regulations

Product architecture

- **Ideal multiservice platform:** provides data, voice SIP and H.323, LAN switching, wireless, 3G, firewall, and IPSec/SSL VPN all in one box
- **USB interface:** uses USB memory disk to download and upload configuration files; supports external USB 3G modem for 3G WAN uplink
- **Flexible modular design:** multiple types of modules meet different requirements; for example, Smart Interface Cards (SICs) are small and cost-effective modules, Multi-functional Interface Modules (MIMs) are more high-density and affordable modules, Flexible Interface Cards (FICs) provide high reliability and are hot-swappable, and double-width modules provide high density

Warranty and support

- **1-year warranty:** with advance replacement and 30-calendar-day delivery (available in most countries)
- **Electronic and telephone support:** limited electronic and telephone support is available from HP; refer to www.hp.com/networking/warranty for details on the support provided and the period during which support is available
- **Software releases:** refer to www.hp.com/networking/warranty for details on the software releases provided and the period during which software releases are available for your product(s)

Specifications

	HP A-MSR20-10 Multi-Service Router (JD431A)	HP A-MSR20-11 Multi-Service Router (JF239A)	HP A-MSR20-12 Multi-Service Router (JF241A)
Ports	1 SIC slot 1 RJ-45 auto-sensing 10/100 WAN port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full 4 RJ-45 auto-sensing 10/100 LAN ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full	1 SIC slot 1 Serial port 1 RJ-45 auto-sensing 10/100 WAN port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full 4 RJ-45 auto-sensing 10/100 LAN ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full	1 SIC slot 1 E1 port 1 RJ-45 auto-sensing 10/100 WAN port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full 4 RJ-45 auto-sensing 10/100 LAN ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full
Physical characteristics			
Dimensions	9.45(d) x 11.81(w) x 1.74(h) in. (24 x 30 x 4.42 cm) (1U height)	9.45(d) x 11.81(w) x 1.74(h) in. (24 x 30 x 4.42 cm) (1U height)	9.45(d) x 11.81(w) x 1.74(h) in. (24 x 30 x 4.42 cm) (1U height)
Weight	6.61 lb. (3.0 kg)	6.61 lb. (3 kg)	6.61 lb. (3.0 kg)
Memory and processor			
Processor	RISC @ 333 MHz, 256 MB DDR SDRAM, 32 MB flash	RISC @ 333 MHz, 256 MB DDR SDRAM, 32 MB flash	RISC @ 333 MHz, 256 MB DDR SDRAM, 32 MB flash
Mounting	Desktop or can be mounted in a standard 19-in. rack when used with the optional rack-mount kit.	Desktop or can be mounted in a standard 19-in. rack when used with the optional rack-mount kit.	Desktop or can be mounted in a standard 19-in. rack when used with the optional rack-mount kit.
Performance			
Throughput	up to 160 Kpps (64-byte packets)	up to 160 Kpps (64-byte packets)	up to 160 Kpps (64-byte packets)
Routing table size	10,000 entries	10,000 entries	10,000 entries
Environment			
Operating temperature	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)
Operating relative humidity	5% to 90%, non-condensing	5% to 95%, non-condensing	5% to 90%, non-condensing
Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Non-operating/Storage relative humidity	5% to 90%, non-condensing	5% to 90%, non-condensing	5% to 90%, non-condensing
Electrical characteristics			
Maximum heat dissipation	85 BTU/hr (89.68 kJ/hr)	85 BTU/hr (89.68 kJ/hr)	85 BTU/hr (89.68 kJ/hr)
Voltage	100-120 / 200-240 VAC	100-120 / 200-240 VAC	100-120 / 200-240 VAC
Maximum power rating	25 W	25 W	25 W
Frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; CAN/CSA 22.2 No. 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J
Emissions	EN 55022 Class B; ICES-003 Class B; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR22 Class B; FCC (CFR 47, Part 15) Class B	EN 55022 Class B; ICES-003 Class B; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR22 Class B; FCC (CFR 47, Part 15) Class B	EN 55022 Class B; ICES-003 Class B; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR22 Class B; FCC (CFR 47, Part 15) Class B
Telecom	FCC part 68	FCC part 68	FCC part 68
Management	IMC - Intelligent Management Center; command-line interface; Web browser; out-of-band management (serial RS-232C); out-of-band management (DB-9 serial port console); SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; command-line interface; Web browser; out-of-band management (serial RS-232C); out-of-band management (DB-9 serial port console); SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; command-line interface; Web browser; out-of-band management (serial RS-232C); out-of-band management (DB-9 serial port console); SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB
Notes	Weight is with no optional modules installed.	Weight is with no optional modules installed.	Height does not include antennas on wireless models; weight is with no optional modules installed.

Specifications (continued)

	HP A-MSR20-10 Multi-Service Router (JD431A)	HP A-MSR20-11 Multi-Service Router (JF239A)	HP A-MSR20-12 Multi-Service Router (JF241A)
Services	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

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	HP A-MSR20-10 Multi-Service Router (JD431A)	HP A-MSR20-11 Multi-Service Router (JF239A)	HP A-MSR20-12 Multi-Service Router (JF241A)
Standards and protocols (applies to all products in series)	**BGP** RFC 1163 Border Gateway Protocol (BGP) RFC 1267 Border Gateway Protocol 3 (BGP-3) RFC 1657 Definitions of Managed Objects for BGPv4 RFC 1771 BGPv4 RFC 1772 Application of the BGP RFC 1773 Experience with the BGP-4 Protocol RFC 1774 BGP-4 Protocol Analysis RFC 1965 BGP4 confederations RFC 1997 BGP Communities Attribute RFC 1998 PPP Gandalf FZA Compression Protocol RFC 2385 BGP Session Protection via TCP MD5 RFC 2439 BGP Route Flap Damping **Device management** RFC 1305 NTPv3 RFC 1945 Hypertext Transfer Protocol – HTTP/1.0 RFC 2271 FrameWork RFC 2452 MIB for TCP6 RFC 2454 MIB for UDP6 **General protocols** IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1s Multiple Spanning Trees IEEE 802.1w Rapid Reconfiguration of Spanning Tree RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 791 IP RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 855 Telnet Option Specification RFC 856 TELNET RFC 858 Telnet Suppress Go Ahead Option RFC 894 IP over Ethernet RFC 925 Multi-LAN Address Resolution RFC 950 Internet Standard Subnetting Procedure RFC 959 File Transfer Protocol (FTP) RFC 1006 ISO transport services on top of the TCP: Version 3 RFC 1027 Proxy ARP RFC 1034 Domain Concepts and Facilities RFC 1035 Domain Implementation and Specification RFC 1042 IP Datagrams RFC 1058 RIPv1 RFC 1071 Computing the Internet Checksum RFC 1091 Telnet Terminal-Type Option RFC 1122 Host Requirements RFC 1141 Incremental updating of the Internet checksum RFC 1142 OSI IS-IS Intra-domain Routing Protocol RFC 1144 Compressing TCP/IP headers for low-speed serial links RFC 1195 OSI ISIS for IP and Dual Environments RFC 1256 ICMP Router Discovery Protocol (IRDP) RFC 1293 Inverse Address Resolution Protocol RFC 1315 Management Information Base for Frame Relay DTEs RFC 1332 The PPP Internet Protocol Control Protocol (IPCP) RFC 1333 PPP Link Quality Monitoring RFC 1334 PPP Authentication Protocols (PAP) RFC 1349 Type of Service RFC 1350 TFTP Protocol (revision 2) RFC 1377 The PPP OSI Network Layer Control Protocol (OSINLCP) RFC 1381 SNMP MIB Extension for X.25 LAPB RFC 1471 The Definitions of Managed Objects for the Link Control Protocol of the Point-to-Point Protocol RFC 1472 The Definitions of Managed Objects	for the Security Protocols of the Point-to-Point Protocol RFC 1490 Multiprotocol Interconnect over Frame Relay RFC 1519 CIDR RFC 1534 DHCP/BOOTP Interoperation RFC 1542 Clarifications and Extensions for the Bootstrap Protocol RFC 1552 The PPP Internetworking Packet Exchange Control Protocol (IPXCP) RFC 1577 Classical IP and ARP over ATM RFC 1613 Cisco Systems X.25 over TCP (XOT) RFC 1624 Incremental Internet Checksum RFC 1631 NAT RFC 1638 PPP Bridging Control Protocol (BCP) RFC 1661 The Point-to-Point Protocol (PPP) RFC 1662 PPP in HDLC-like Framing RFC 1695 Definitions of Managed Objects for ATM Management Version 8.0 using SMIv2 RFC 1701 Generic Routing Encapsulation RFC 1702 Generic Routing Encapsulation over IPv4 networks RFC 1721 RIP-2 Analysis RFC 1722 RIP-2 Applicability RFC 1723 RIP v2 RFC 1795 Data Link Switching: Switch-to-Switch Protocol AIW DLSw RIG: DLSw Closed Pages, DLSw Standard Version 1 RFC 1812 IPv4 Routing RFC 1829 The ESP DES-CBC Transform RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses RFC 1944 Benchmarking Methodology for Network Interconnect Devices RFC 1973 PPP in Frame Relay RFC 1974 PPP Stac LZS Compression Protocol RFC 1990 The PPP Multilink Protocol (MP) RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP) RFC 2091 Trigger RIP RFC 2131 DHCP RFC 2132 DHCP Options and BOOTP Vendor Extensions RFC 2166 APPN Implementer's Workshop Closed Pages Document DLSw v2.0 Enhancements RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification RFC 2280 Routing Policy Specification Language (RPSL) RFC 2284 EAP over LAN RFC 2338 VRRP RFC 2364 PPP Over AAL5 RFC 2374 An Aggregatable Global Unicast Address Format RFC 2451 The ESP CBC-Mode Cipher Algorithms RFC 2453 RIPv2 RFC 2510 Internet X.509 Public Key Infrastructure Certificate Management Protocols RFC 2511 Internet X.509 Certificate Request Message Format RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE) RFC 2644 Directed Broadcast Control RFC 2661 L2TP RFC 2663 NAT Terminology and Considerations RFC 2684 Multiprotocol Encapsulation over ATM Adaptation Layer 5 RFC 2694 DNS extensions to Network Address Translators (DNS_ALG) RFC 2702 Requirements for Traffic Engineering Over MPLS RFC 2747 RSVP Cryptographic Authentication RFC 2763 Dynamic Name-to-System ID mapping support RFC 2765 Stateless IP/ICMP Translation Algorithm (SIIT) RFC 2766 Network Address Translation - Protocol	Translation (NAT-PT) RFC 2784 Generic Routing Encapsulation (GRE) RFC 2787 Definitions of Managed Objects for VRRP RFC 2961 RSVP Refresh Overhead Reduction Extensions RFC 2966 Domain-wide Prefix Distribution with Two-Level IS-IS RFC 2973 IS-IS Mesh Groups RFC 2993 Architectural Implications of NAT RFC 3022 Traditional IP Network Address Translator (Traditional NAT) RFC 3027 Protocol Complications with the IP Network Address Translator RFC 3031 Multiprotocol Label Switching Architecture RFC 3032 MPLS Label Stack Encoding RFC 3036 LDP Specification RFC 3046 DHCP Relay Agent Information Option RFC 3063 MPLS Loop Prevention Mechanism RFC 3065 Support AS confederation RFC 3137 OSPF Stub Router Advertisement RFC 3209 RSVP-TE Extensions to RSVP for LSP Tunnels RFC 3210 Applicability Statement for Extensions to RSVP for LSP-Tunnels RFC 3212 Constraint-Based LSP setup using LDP (CR-LDP) RFC 3214 LSP Modification Using CR-LDP RFC 3215 LDP State Machine RFC 3268 Advanced Encryption Standard (AES) Ciphersuites for Transport Layer Security (TLS) RFC 3277 IS-IS Transient Blackhole Avoidance RFC 3279 Algorithms and Identifiers for the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile RFC 3280 Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile RFC 3392 Support BGP capabilities advertisement RFC 3479 Fault Tolerance for the Label Distribution Protocol (LDP) RFC 3564 Requirements for Support of Differentiated Services-aware MPLS Traffic Engineering RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec RFC 3706 A Traffic-Based Method of Detecting Dead Internet Key Exchange (IKE) Peers RFC 3784 ISIS TE support RFC 3786 Extending the Number of IS-IS LSP Fragments Beyond the 256 Limit RFC 3811 Definitions of Textual Conventions (TCs) for Multiprotocol Label Switching (MPLS) Management RFC 3812 Multiprotocol Label Switching (MPLS) Traffic Engineering (TE) Management Information Base (MIB) RFC 3847 Restart signaling for IS-IS **IP multicast** RFC 1112 IGMP RFC 2236 IGMPv2 RFC 2283 Multiprotocol Extensions for BGP-4 RFC 2362 PIM Sparse Mode RFC 2365 Administratively Scoped IP Multicast RFC 2710 Multicast Listener Discovery (MLD) for IPv6 RFC 2934 Protocol Independent Multicast MIB for IPv4 RFC 3376 IGMPv3 **IPv6** RFC 1981 IPv6 Path MTU Discovery RFC 2080 RIPng for IPv6 RFC 2292 Advanced Sockets API for IPv6

Specifications (continued)

	HP A-MSR20-10 Multi-Service Router (JD431A)	HP A-MSR20-11 Multi-Service Router (JF239A)	HP A-MSR20-12 Multi-Service Router (JF241A)
Standards and protocols (applies to all products in series)	RFC 2461 IPv6 Neighbor Discovery RFC 2462 IPv6 Stateless Address Auto-configuration RFC 2463 ICMPv6 RFC 2464 Transmission of IPv6 over Ethernet Networks RFC 2472 IP Version 6 over PPP RFC 2473 Generic Packet Tunneling in IPv6 RFC 2475 IPv6 DiffServ Architecture RFC 2529 Transmission of IPv6 Packets over IPv4 RFC 2545 Use of MP-BGP-4 for IPv6 RFC 2553 Basic Socket Interface Extensions for IPv6 RFC 2740 OSPFv3 for IPv6 RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers RFC 3056 Connection of IPv6 Domains via IPv4 Clouds RFC 3513 IPv6 Addressing Architecture RFC 3596 DNS Extension for IPv6 **MIBs** RFC 1213 MIB II RFC 1229 Interface MIB Extensions RFC 1286 Bridge MIB RFC 1493 Bridge MIB RFC 1573 SNMP MIB II RFC 1724 RIPv2 MIB RFC 1757 Remote Network Monitoring MIB RFC 1850 OSPFv2 MIB RFC 2011 SNMPv2 MIB for IP RFC 2012 SNMPv2 MIB for TCP RFC 2013 SNMPv2 MIB for UDP RFC 2233 Interfaces MIB RFC 2454 IPV6-UDP-MIB RFC 2465 IPv6 MIB RFC 2466 ICMPv6 MIB RFC 2618 RADIUS Client MIB RFC 2620 RADIUS Accounting MIB RFC 2674 802.1p and IEEE 802.1Q Bridge MIB RFC 2737 Entity MIB (Version 2)	RFC 2863 The Interfaces Group MIB RFC 2933 IGMP MIB RFC 3813 MPLS LSR MIB **Network management** IEEE 802.1D (STP) RFC 1155 Structure of Management Information RFC 1157 SNMPv1 RFC 1905 SNMPv2 Protocol Operations RFC 2272 SNMPv3 Management Protocol RFC 2273 SNMPv3 Applications RFC 2274 USM for SNMPv3 RFC 2275 VACM for SNMPv3 RFC 2575 SNMPv3 View-based Access Control Model (VACM) RFC 3164 BSD syslog Protocol **OSPF** RFC 1245 OSPF protocol analysis RFC 1246 Experience with OSPF RFC 1587 OSPF NSSA RFC 1765 OSPF Database Overflow RFC 1850 OSPFv2 Management Information Base (MIB), traps RFC 2328 OSPFv2 RFC 2370 OSPF Opaque LSA Option RFC 3101 OSPF NSSA **QoS/CoS** IEEE 802.1P (CoS) RFC 2474 DS Field in the IPv4 and IPv6 Headers RFC 2475 DiffServ Architecture RFC 2597 DiffServ Assured Forwarding (AF) RFC 2598 DiffServ Expedited Forwarding (EF) RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP **Security**	IEEE 802.1X Port Based Network Access Control RFC 1321 The MD5 Message-Digest Algorithm RFC 2082 RIP-2 MD5 Authentication RFC 2104 Keyed-Hashing for Message Authentication RFC 2138 RADIUS Authentication RFC 2209 RSVP-Message Processing RFC 2246 Transport Layer Security (TLS) RFC 2716 PPP EAP TLS Authentication Protocol RFC 2865 RADIUS Authentication RFC 2866 RADIUS Accounting RFC 3567 Intermediate System (IS) to IS Cryptographic Authentication **VPN** RFC 2403 - HMAC-MD5-96 RFC 2404 - HMAC-SHA1-96 RFC 2405 - DES-CBC Cipher algorithm RFC 2547 BGP/MPLS VPNs RFC 2796 BGP Route Reflection - An Alternative to Full Mesh IBGP RFC 2842 Capabilities Advertisement with BGP-4 RFC 2858 Multiprotocol Extensions for BGP-4 RFC 2918 Route Refresh Capability for BGP-4 RFC 3107 Carrying Label Information in BGP-4 **IPsec** RFC 1828 IP Authentication using Keyed MD5 RFC 2401 IP Security Architecture RFC 2402 IP Authentication Header RFC 2406 IP Encapsulating Security Payload RFC 2407 - Domain of interpretation RFC 2410 - The NULL Encryption Algorithm and its use with IPsec RFC 2411 IP Security Document Roadmap RFC 2412 – OAKLEY RFC 2865 - Remote Authentication Dial In User Service (RADIUS)

Specifications

	HP A-MSR20-12 W Multi-Service Router (JF807A)	HP A-MSR20-12 T1 Multi-Service Router (JF806A)	HP A-MSR20-13 Multi-Service Router (JF240A)
Ports	1 SIC slot 1 E1 port 1 RJ-45 auto-sensing 10/100 WAN port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full 4 RJ-45 auto-sensing 10/100 LAN ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full	1 SIC slot 1 T1 port 1 RJ-45 auto-sensing 10/100 WAN port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full 4 RJ-45 auto-sensing 10/100 LAN ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full	1 SIC slot 1 RJ-11 4-wire G.shdsl port 1 RJ-45 auto-sensing 10/100 WAN port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full 4 RJ-45 auto-sensing 10/100 LAN ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full
AP characteristics			
Radios	Single (b/g)		
Radio operation modes	Client access		
AP operation modes	Autonomous		
Wi-Fi Alliance Certification	b/g Wi-Fi Certified		
Physical characteristics			
Dimensions	9.45(d) x 11.81(w) x 1.74(h) in. (24 x 30 x 4.42 cm) (1U height)	9.45(d) x 11.81(w) x 1.74(h) in. (24 x 30 x 4.42 cm) (1U height)	9.45(d) x 11.81(w) x 1.74(h) in. (24 x 30 x 4.42 cm) (1U height)
Weight	6.61 lb. (3.0 kg)	6.61 lb. (3 kg)	6.61 lb. (3.0 kg)
Memory and processor			
Processor	RISC @ 333 MHz, 256 MB DDR SDRAM, 32 MB flash	RISC @ 333 MHz, 256 MB DDR SDRAM, 32 MB flash	RISC @ 333 MHz, 256 MB DDR SDRAM, 32 MB flash
Mounting	Desktop or can be mounted in a standard 19-in. rack when used with the optional rack-mount kit.	Desktop or can be mounted in a standard 19-in. rack when used with the optional rack-mount kit.	Desktop or can be mounted in a standard 19-in. rack when used with the optional rack-mount kit.
Performance			
Throughput	up to 160 Kpps (64-byte packets)	up to 160 Kpps (64-byte packets)	up to 160 Kpps (64-byte packets)
Routing table size	10,000 entries	10,000 entries	10,000 entries
Environment			
Operating temperature	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)
Operating relative humidity	5% to 90%, non-condensing	5% to 90%, non-condensing	5%% to 90%%, non-condensing
Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Non-operating/Storage relative humidity	5% to 90%, non-condensing	5% to 90%, non-condensing	5% to 90%, non-condensing
Electrical characteristics			
Maximum heat dissipation	85 BTU/hr (89.68 kJ/hr)	85 BTU/hr (89.68 kJ/hr)	85 BTU/hr (89.68 kJ/hr)
Voltage	100-120 / 200-240 VAC	100-120 / 200-240 VAC	100-120 / 200-240 VAC
Maximum power rating	25 W	25 W	25 W
Frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J
Emissions	EN 55022 Class B; ICES-003 Class B; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR22 Class B; FCC (CFR 47, Part 15) Class B	EN 55022 Class B; ICES-003 Class B; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR22 Class B; FCC (CFR 47, Part 15) Class B	EN 55022 Class B; ICES-003 Class B; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR22 Class B; FCC (CFR 47, Part 15) Class B
Telecom	FCC part 68	FCC part 68	FCC part 68

Specifications (continued)

	HP A-MSR20-12 W Multi-Service Router (JF807A)	HP A-MSR20-12 T1 Multi-Service Router (JF806A)	HP A-MSR20-13 Multi-Service Router (JF240A)
Management	IMC - Intelligent Management Center; command-line interface; Web browser; out-of-band management (serial RS-232C); out-of-band management (DB-9 serial port console); SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; command-line interface; Web browser; out-of-band management (serial RS-232C); out-of-band management (DB-9 serial port console); SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; command-line interface; Web browser; out-of-band management (serial RS-232C); out-of-band management (DB-9 serial port console); SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB
Notes	Height does not include antennas on wireless models; weight is with no optional modules installed.	Height does not include antennas on wireless models; weight is with no optional modules installed.	Height does not include antennas on wireless models; weight is with no optional modules installed.
Services	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

Specifications (continued)

	HP A-MSR20-12 W Multi-Service Router (JF807A)	HP A-MSR20-12 T1 Multi-Service Router (JF806A)	HP A-MSR20-13 Multi-Service Router (JF240A)
Standards and protocols (applies to all products in series)	**BGP** RFC 1163 Border Gateway Protocol (BGP) RFC 1267 Border Gateway Protocol 3 (BGP-3) RFC 1657 Definitions of Managed Objects for BGPv4 RFC 1771 BGPv4 RFC 1772 Application of the BGP RFC 1773 Experience with the BGP-4 Protocol RFC 1774 BGP-4 Protocol Analysis RFC 1965 BGP4 confederations RFC 1997 BGP Communities Attribute RFC 1998 PPP Gandalf FZA Compression Protocol RFC 2385 BGP Session Protection via TCP MD5 RFC 2439 BGP Route Flap Damping **Device management** RFC 1305 NTPv3 RFC 1945 Hypertext Transfer Protocol – HTTP/1.0 RFC 2271 FrameWork RFC 2452 MIB for TCP6 RFC 2454 MIB for UDP6 **General protocols** IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1s Multiple Spanning Trees IEEE 802.1w Rapid Reconfiguration of Spanning Tree RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 791 IP RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 855 Telnet Option Specification RFC 856 TELNET RFC 858 Telnet Suppress Go Ahead Option RFC 894 IP over Ethernet RFC 925 Multi-LAN Address Resolution RFC 950 Internet Standard Subnetting Procedure RFC 959 File Transfer Protocol (FTP) RFC 1006 ISO transport services on top of the TCP: Version 3 RFC 1027 Proxy ARP RFC 1034 Domain Concepts and Facilities RFC 1035 Domain Implementation and Specification RFC 1042 IP Datagrams RFC 1058 RIPv1 RFC 1071 Computing the Internet Checksum RFC 1091 Telnet Terminal-Type Option RFC 1122 Host Requirements RFC 1141 Incremental updating of the Internet checksum RFC 1142 OSI IS-IS Intra-domain Routing Protocol RFC 1144 Compressing TCP/IP headers for low-speed serial links RFC 1195 OSI ISIS for IP and Dual Environments RFC 1256 ICMP Router Discovery Protocol (IRDP) RFC 1293 Inverse Address Resolution Protocol RFC 1315 Management Information Base for Frame Relay DTEs RFC 1332 The PPP Internet Protocol Control Protocol (IPCP) RFC 1333 PPP Link Quality Monitoring RFC 1334 PPP Authentication Protocols (PAP) RFC 1349 Type of Service RFC 1350 TFTP Protocol (revision 2) RFC 1377 The PPP OSI Network Layer Control Protocol (OSINLCP) RFC 1381 SNMP MIB Extension for X.25 LAPB RFC 1471 The Definitions of Managed Objects for the Link Control Protocol of the Point-to-Point Protocol RFC 1472 The Definitions of Managed Objects	for the Security Protocols of the Point-to-Point Protocol RFC 1490 Multiprotocol Interconnect over Frame Relay RFC 1519 CIDR RFC 1534 DHCP/BOOTP Interoperation RFC 1542 Clarifications and Extensions for the Bootstrap Protocol RFC 1552 The PPP Internetworking Packet Exchange Control Protocol (IPXCP) RFC 1577 Classical IP and ARP over ATM RFC 1613 Cisco Systems X.25 over TCP (XOT) RFC 1624 Incremental Internet Checksum RFC 1631 NAT RFC 1638 PPP Bridging Control Protocol (BCP) RFC 1661 The Point-to-Point Protocol (PPP) RFC 1662 PPP in HDLC-like Framing RFC 1695 Definitions of Managed Objects for ATM Management Version 8.0 using SMIv2 RFC 1701 Generic Routing Encapsulation RFC 1702 Generic Routing Encapsulation over IPv4 networks RFC 1721 RIP-2 Analysis RFC 1722 RIP-2 Applicability RFC 1723 RIP v2 RFC 1795 Data Link Switching: Switch-to-Switch Protocol AIW DLSw RIG: DLSw Closed Pages, DLSw Standard Version 1 RFC 1812 IPv4 Routing RFC 1829 The ESP DES-CBC Transform RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses RFC 1944 Benchmarking Methodology for Network Interconnect Devices RFC 1973 PPP in Frame Relay RFC 1974 PPP Stac LZS Compression Protocol RFC 1990 The PPP Multilink Protocol (MP) RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP) RFC 2091 Trigger RIP RFC 2131 DHCP RFC 2132 DHCP Options and BOOTP Vendor Extensions RFC 2166 APPN Implementer's Workshop Closed Pages Document DLSw v2.0 Enhancements RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification RFC 2280 Routing Policy Specification Language (RPSL) RFC 2284 EAP over LAN RFC 2338 VRRP RFC 2364 PPP Over AAL5 RFC 2374 An Aggregatable Global Unicast Address Format RFC 2451 The ESP CBC-Mode Cipher Algorithms RFC 2453 RIPv2 RFC 2510 Internet X.509 Public Key Infrastructure Certificate Management Protocols RFC 2511 Internet X.509 Certificate Request Message Format RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE) RFC 2644 Directed Broadcast Control RFC 2661 L2TP RFC 2663 NAT Terminology and Considerations RFC 2684 Multiprotocol Encapsulation over ATM Adaptation Layer 5 RFC 2694 DNS extensions to Network Address Translators (DNS_ALG) RFC 2702 Requirements for Traffic Engineering Over MPLS RFC 2747 RSVP Cryptographic Authentication RFC 2763 Dynamic Name-to-System ID mapping support RFC 2765 Stateless IP/ICMP Translation Algorithm (SIIT) RFC 2766 Network Address Translation - Protocol Translation (NAT-PT) RFC 2784 Generic Routing Encapsulation (GRE) RFC 2787 Definitions of Managed Objects for VRRP RFC 2961 RSVP Refresh Overhead Reduction Extensions RFC 2966 Domain-wide Prefix Distribution with Two-Level IS-IS RFC 2973 IS-IS Mesh Groups RFC 2993 Architectural Implications of NAT RFC 3022 Traditional IP Network Address Translator (Traditional NAT) RFC 3027 Protocol Complications with the IP Network Address Translator RFC 3031 Multiprotocol Label Switching Architecture RFC 3032 MPLS Label Stack Encoding RFC 3036 LDP Specification RFC 3046 DHCP Relay Agent Information Option RFC 3063 MPLS Loop Prevention Mechanism RFC 3065 Support AS confederation RFC 3137 OSPF Stub Router Advertisement RFC 3209 RSVP-TE Extensions to RSVP for LSP Tunnels RFC 3210 Applicability Statement for Extensions to RSVP for LSP-Tunnels RFC 3212 Constraint-Based LSP setup using LDP (CR-LDP) RFC 3214 LSP Modification Using CR-LDP RFC 3215 LDP State Machine RFC 3268 Advanced Encryption Standard (AES) Ciphersuites for Transport Layer Security (TLS) RFC 3277 IS-IS Transient Blackhole Avoidance RFC 3279 Algorithms and Identifiers for the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile RFC 3280 Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile RFC 3392 Support BGP capabilities advertisement RFC 3479 Fault Tolerance for the Label Distribution Protocol (LDP) RFC 3564 Requirements for Support of Differentiated Services-aware MPLS Traffic Engineering RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec RFC 3706 A Traffic-Based Method of Detecting Dead Internet Key Exchange (IKE) Peers RFC 3784 ISIS TE support RFC 3786 Extending the Number of IS-IS LSP Fragments Beyond the 256 Limit RFC 3811 Definitions of Textual Conventions (TCs) for Multiprotocol Label Switching (MPLS) Management RFC 3812 Multiprotocol Label Switching (MPLS) Traffic Engineering (TE) Management Information Base (MIB) RFC 3847 Restart signaling for IS-IS **IP multicast** RFC 1112 IGMP RFC 2236 IGMPv2 RFC 2283 Multiprotocol Extensions for BGP-4 RFC 2362 PIM Sparse Mode RFC 2365 Administratively Scoped IP Multicast RFC 2710 Multicast Listener Discovery (MLD) for IPv6 RFC 2934 Protocol Independent Multicast MIB for IPv4 RFC 3376 IGMPv3 **IPv6** RFC 1981 IPv6 Path MTU Discovery RFC 2080 RIPng for IPv6 RFC 2292 Advanced Sockets API for IPv6

Specifications (continued)

	HP A-MSR20-12 W Multi-Service Router (JF807A)	HP A-MSR20-12 T1 Multi-Service Router (JF806A)	HP A-MSR20-13 Multi-Service Router (JF240A)
Standards and protocols (applies to all products in series)	RFC 2461 IPv6 Neighbor Discovery RFC 2462 IPv6 Stateless Address Auto-configuration RFC 2463 ICMPv6 RFC 2464 Transmission of IPv6 over Ethernet Networks RFC 2472 IP Version 6 over PPP RFC 2473 Generic Packet Tunneling in IPv6 RFC 2475 IPv6 DiffServ Architecture RFC 2529 Transmission of IPv6 Packets over IPv4 RFC 2545 Use of MP-BGP-4 for IPv6 RFC 2553 Basic Socket Interface Extensions for IPv6 RFC 2740 OSPFv3 for IPv6 RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers RFC 3056 Connection of IPv6 Domains via IPv4 Clouds RFC 3513 IPv6 Addressing Architecture RFC 3596 DNS Extension for IPv6 **MIBs** RFC 1213 MIB II RFC 1229 Interface MIB Extensions RFC 1286 Bridge MIB RFC 1493 Bridge MIB RFC 1573 SNMP MIB II RFC 1724 RIPv2 MIB RFC 1757 Remote Network Monitoring MIB RFC 1850 OSPFv2 MIB RFC 2011 SNMPv2 MIB for IP RFC 2012 SNMPv2 MIB for TCP RFC 2013 SNMPv2 MIB for UDP RFC 2233 Interfaces MIB RFC 2454 IPV6-UDP-MIB RFC 2465 IPv6 MIB RFC 2466 ICMPv6 MIB RFC 2618 RADIUS Client MIB RFC 2620 RADIUS Accounting MIB RFC 2674 802.1p and IEEE 802.1Q Bridge MIB RFC 2737 Entity MIB (Version 2)	RFC 2863 The Interfaces Group MIB RFC 2933 IGMP MIB RFC 3813 MPLS LSR MIB **Network management** IEEE 802.1D (STP) RFC 1155 Structure of Management Information RFC 1157 SNMPv1 RFC 1905 SNMPv2 Protocol Operations RFC 2272 SNMPv3 Management Protocol RFC 2273 SNMPv3 Applications RFC 2274 USM for SNMPv3 RFC 2275 VACM for SNMPv3 RFC 2575 SNMPv3 View-based Access Control Model (VACM) RFC 3164 BSD syslog Protocol **OSPF** RFC 1245 OSPF protocol analysis RFC 1246 Experience with OSPF RFC 1587 OSPF NSSA RFC 1765 OSPF Database Overflow RFC 1850 OSPFv2 Management Information Base (MIB), traps RFC 2328 OSPFv2 RFC 2370 OSPF Opaque LSA Option RFC 3101 OSPF NSSA **QoS/CoS** IEEE 802.1P (CoS) RFC 2474 DS Field in the IPv4 and IPv6 Headers RFC 2475 DiffServ Architecture RFC 2597 DiffServ Assured Forwarding (AF) RFC 2598 DiffServ Expedited Forwarding (EF) RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP **Security**	IEEE 802.1X Port Based Network Access Control RFC 1321 The MD5 Message-Digest Algorithm RFC 2082 RIP-2 MD5 Authentication RFC 2104 Keyed-Hashing for Message Authentication RFC 2138 RADIUS Authentication RFC 2209 RSVP-Message Processing RFC 2246 Transport Layer Security (TLS) RFC 2716 PPP EAP TLS Authentication Protocol RFC 2865 RADIUS Authentication RFC 2866 RADIUS Accounting RFC 3567 Intermediate System (IS) to IS Cryptographic Authentication **VPN** RFC 2403 - HMAC-MD5-96 RFC 2404 - HMAC-SHA1-96 RFC 2405 - DES-CBC Cipher algorithm RFC 2547 BGP/MPLS VPNs RFC 2796 BGP Route Reflection - An Alternative to Full Mesh IBGP RFC 2842 Capabilities Advertisement with BGP-4 RFC 2858 Multiprotocol Extensions for BGP-4 RFC 2918 Route Refresh Capability for BGP-4 RFC 3107 Carrying Label Information in BGP-4 **IPsec** RFC 1828 IP Authentication using Keyed MD5 RFC 2401 IP Security Architecture RFC 2402 IP Authentication Header RFC 2406 IP Encapsulating Security Payload RFC 2407 - Domain of interpretation RFC 2410 - The NULL Encryption Algorithm and its use with IPsec RFC 2411 IP Security Document Roadmap RFC 2412 – OAKLEY RFC 2865 - Remote Authentication Dial In User Service (RADIUS)

Specifications

	HP A-MSR20-13 W Multi-Service Router (JF808A)	HP A-MSR20-15 A Multi-Service Router (JF237A)	HP A-MSR20-15 AW Multi-Service Router (JF238A)
Ports	1 SIC slot 1 RJ-11 4-wire G.shdsl port 1 RJ-45 auto-sensing 10/100 WAN port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full 4 RJ-45 auto-sensing 10/100 LAN ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full	1 SIC slot 1 RJ-45 ADSL2+ port 1 Analog Modem port 1 RJ-45 auto-sensing 10/100 WAN port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full 4 RJ-45 auto-sensing 10/100 LAN ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full	1 SIC slot 1 RJ-45 ADSL2+ port 1 Analog Modem port 1 RJ-45 auto-sensing 10/100 WAN port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full 4 RJ-45 auto-sensing 10/100 LAN ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full
AP characteristics			
Radios	Single (b/g)		Single (b/g)
Radio operation modes	Client access		Client access
AP operation modes	Autonomous		Autonomous
Wi-Fi Alliance Certification	b/g Wi-Fi Certified		b/g Wi-Fi Certified
Physical characteristics			
Dimensions	9.45(d) x 11.81(w) x 1.74(h) in. (24 x 30 x 4.42 cm) (1U height)	9.45(d) x 11.81(w) x 1.74(h) in. (24 x 30 x 4.42 cm) (1U height)	9.45(d) x 11.81(w) x 1.74(h) in. (24 x 30 x 4.42 cm) (1U height)
Weight	6.61 lb. (3.0 kg)	6.61 lb. (3.0 kg)	6.61 lb. (3 kg)
Memory and processor			
Processor	RISC @ 333 MHz, 256 MB DDR SDRAM, 32 MB flash	RISC @ 333 MHz, 256 MB DDR SDRAM, 32 MB flash	RISC @ 333 MHz, 256 MB DDR SDRAM, 32 MB flash
Mounting	Desktop or can be mounted in a standard 19-in. rack when used with the optional rack-mount kit.	Desktop or can be mounted in a standard 19-in. rack when used with the optional rack-mount kit.	Desktop or can be mounted in a standard 19-in. rack when used with the optional rack-mount kit.
Performance			
Throughput	up to 160 Kpps (64-byte packets)	up to 160 Kpps (64-byte packets)	up to 160 Kpps (64-byte packets)
Routing table size	10,000 entries	10,000 entries	10,000 entries
Environment			
Operating temperature	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)
Operating relative humidity	5% to 95%, non-condensing	5% to 90%, non-condensing	5% to 90%, non-condensing
Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Non-operating/Storage relative humidity	5% to 95%, non-condensing	5% to 90%, non-condensing	5% to 90%, non-condensing
Electrical characteristics			
Maximum heat dissipation	85 BTU/hr (89.68 kJ/hr)	85 BTU/hr (89.68 kJ/hr)	85 BTU/hr (89.68 kJ/hr)
Voltage	100-120 / 200-240 VAC	100-120 / 200-240 VAC	100-120 / 200-240 VAC
Maximum power rating	25 W	25 W	25 W
Frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; EN 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J
Emissions	EN 55022 Class B; ICES-003 Class B; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR22 Class B; FCC (CFR 47, Part 15) Class B	EN 55022 Class B; ICES-003 Class B; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR22 Class B; FCC (CFR 47, Part 15) Class B	EN 55022 Class B; ICES-003 Class B; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR22 Class B; FCC (CFR 47, Part 15) Class B
Telecom			
	FCC part 68	FCC part 68	FCC part 68

Specifications (continued)

	HP A-MSR20-13 W Multi-Service Router (JF808A)	HP A-MSR20-15 A Multi-Service Router (JF237A)	HP A-MSR20-15 AW Multi-Service Router (JF238A)
Management	IMC - Intelligent Management Center; command-line interface; Web browser; out-of-band management (serial RS-232C); out-of-band management (DB-9 serial port console); SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; command-line interface; Web browser; out-of-band management (serial RS-232C); out-of-band management (DB-9 serial port console); SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; command-line interface; Web browser; out-of-band management (serial RS-232C); out-of-band management (DB-9 serial port console); SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB
Notes	Height does not include antennas on wireless models; weight is with no optional modules installed.	Height does not include antennas on wireless models; weight is with no optional modules installed.	Height does not include antennas on wireless models; weight is with no optional modules installed.
Services	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

Specifications (continued)

	HP A-MSR20-13 W Multi-Service Router (JF808A)	HP A-MSR20-15 A Multi-Service Router (JF237A)	HP A-MSR20-15 AW Multi-Service Router (JF238A)
Standards and protocols (applies to all products in series)	**BGP** RFC 1163 Border Gateway Protocol (BGP) RFC 1267 Border Gateway Protocol 3 (BGP-3) RFC 1657 Definitions of Managed Objects for BGPv4 RFC 1771 BGPv4 RFC 1772 Application of the BGP RFC 1773 Experience with the BGP-4 Protocol RFC 1774 BGP-4 Protocol Analysis RFC 1965 BGP4 confederations RFC 1997 BGP Communities Attribute RFC 1998 PPP Gandalf FZA Compression Protocol RFC 2385 BGP Session Protection via TCP MD5 RFC 2439 BGP Route Flap Damping **Device management** RFC 1305 NTPv3 RFC 1945 Hypertext Transfer Protocol – HTTP/1.0 RFC 2271 FrameWork RFC 2452 MIB for TCP6 RFC 2454 MIB for UDP6 **General protocols** IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1s Multiple Spanning Trees IEEE 802.1w Rapid Reconfiguration of Spanning Tree RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 791 IP RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 855 Telnet Option Specification RFC 856 TELNET RFC 858 Telnet Suppress Go Ahead Option RFC 894 IP over Ethernet RFC 925 Multi-LAN Address Resolution RFC 950 Internet Standard Subnetting Procedure RFC 959 File Transfer Protocol (FTP) RFC 1006 ISO transport services on top of the TCP: Version 3 RFC 1027 Proxy ARP RFC 1034 Domain Concepts and Facilities RFC 1035 Domain Implementation and Specification RFC 1042 IP Datagrams RFC 1058 RIPv1 RFC 1071 Computing the Internet Checksum RFC 1091 Telnet Terminal-Type Option RFC 1122 Host Requirements RFC 1141 Incremental updating of the Internet checksum RFC 1142 OSI IS-IS Intra-domain Routing Protocol RFC 1144 Compressing TCP/IP headers for low-speed serial links RFC 1195 OSI ISIS for IP and Dual Environments RFC 1256 ICMP Router Discovery Protocol (IRDP) RFC 1293 Inverse Address Resolution Protocol RFC 1315 Management Information Base for Frame Relay DTEs RFC 1332 The PPP Internet Protocol Control Protocol (IPCP) RFC 1333 PPP Link Quality Monitoring RFC 1334 PPP Authentication Protocols (PAP) RFC 1349 Type of Service RFC 1350 TFTP Protocol (revision 2) RFC 1377 The PPP OSI Network Layer Control Protocol (OSINLCP) RFC 1381 SNMP MIB Extension for X.25 LAPB RFC 1471 The Definitions of Managed Objects for the Link Control Protocol of the Point-to-Point Protocol	RFC 1472 The Definitions of Managed Objects for the Security Protocols of the Point-to-Point Protocol RFC 1490 Multiprotocol Interconnect over Frame Relay RFC 1519 CIDR RFC 1534 DHCP/BOOTP Interoperation RFC 1542 Clarifications and Extensions for the Bootstrap Protocol RFC 1552 The PPP Internetworking Packet Exchange Control Protocol (IPXCP) RFC 1577 Classical IP and ARP over ATM RFC 1613 Cisco Systems X.25 over TCP (XOT) RFC 1624 Incremental Internet Checksum RFC 1631 NAT RFC 1638 PPP Bridging Control Protocol (BCP) RFC 1661 The Point-to-Point Protocol (PPP) RFC 1662 PPP in HDLC-like Framing RFC 1695 Definitions of Managed Objects for ATM Management Version 8.0 using SMIv2 RFC 1701 Generic Routing Encapsulation RFC 1702 Generic Routing Encapsulation over IPv4 networks RFC 1721 RIP-2 Analysis RFC 1722 RIP-2 Applicability RFC 1723 RIP v2 RFC 1795 Data Link Switching: Switch-to-Switch Protocol AIW DLSw RIG: DLSw Closed Pages, DLSw Standard Version 1 RFC 1812 IPv4 Routing RFC 1829 The ESP DES-CBC Transform RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses RFC 1944 Benchmarking Methodology for Network Interconnect Devices RFC 1973 PPP in Frame Relay RFC 1974 PPP Stac LZS Compression Protocol RFC 1990 The PPP Multilink Protocol (MP) RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP) RFC 2091 Trigger RIP RFC 2131 DHCP RFC 2132 DHCP Options and BOOTP Vendor Extensions RFC 2166 APPN Implementer's Workshop Closed Pages Document DLSw v2.0 Enhancements RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification RFC 2280 Routing Policy Specification Language (RPSL) RFC 2284 EAP over LAN RFC 2338 VRRP RFC 2364 PPP Over AAL5 RFC 2374 An Aggregatable Global Unicast Address Format RFC 2451 The ESP CBC-Mode Cipher Algorithms RFC 2453 RIPv2 RFC 2510 Internet X.509 Public Key Infrastructure Certificate Management Protocols RFC 2511 Internet X.509 Certificate Request Message Format RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE) RFC 2644 Directed Broadcast Control RFC 2661 L2TP RFC 2663 NAT Terminology and Considerations RFC 2684 Multiprotocol Encapsulation over ATM Adaptation Layer 5 RFC 2694 DNS extensions to Network Address Translators (DNS_ALG) RFC 2702 Requirements for Traffic Engineering Over MPLS RFC 2747 RSVP Cryptographic Authentication RFC 2763 Dynamic Name-to-System ID mapping support RFC 2765 Stateless IP/ICMP Translation Algorithm (SIIT)	RFC 2766 Network Address Translation - Protocol Translation (NAT-PT) RFC 2784 Generic Routing Encapsulation (GRE) RFC 2787 Definitions of Managed Objects for VRRP RFC 2961 RSVP Refresh Overhead Reduction Extensions RFC 2966 Domain-wide Prefix Distribution with Two-Level IS-IS RFC 2973 IS-IS Mesh Groups RFC 2993 Architectural Implications of NAT RFC 3022 Traditional IP Network Address Translator (Traditional NAT) RFC 3027 Protocol Complications with the IP Network Address Translator RFC 3031 Multiprotocol Label Switching Architecture RFC 3032 MPLS Label Stack Encoding RFC 3036 LDP Specification RFC 3046 DHCP Relay Agent Information Option RFC 3063 MPLS Loop Prevention Mechanism RFC 3065 Support AS confederation RFC 3137 OSPF Stub Router Advertisement RFC 3209 RSVP-TE Extensions to RSVP for LSP Tunnels RFC 3210 Applicability Statement for Extensions to RSVP for LSP-Tunnels RFC 3212 Constraint-Based LSP setup using LDP (CR-LDP) RFC 3214 LSP Modification Using CR-LDP RFC 3215 LDP State Machine RFC 3268 Advanced Encryption Standard (AES) Ciphersuites for Transport Layer Security (TLS) RFC 3277 IS-IS Transient Blackhole Avoidance RFC 3279 Algorithms and Identifiers for the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile RFC 3280 Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile RFC 3392 Support BGP capabilities advertisement RFC 3479 Fault Tolerance for the Label Distribution Protocol (LDP) RFC 3564 Requirements for Support of Differentiated Services-aware MPLS Traffic Engineering RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec RFC 3706 A Traffic-Based Method of Detecting Dead Internet Key Exchange (IKE) Peers RFC 3784 ISIS TE support RFC 3786 Extending the Number of IS-IS LSP Fragments Beyond the 256 Limit RFC 3811 Definitions of Textual Conventions (TCs) for Multiprotocol Label Switching (MPLS) Management RFC 3812 Multiprotocol Label Switching (MPLS) Traffic Engineering (TE) Management Information Base (MIB) RFC 3847 Restart signaling for IS-IS **IP multicast** RFC 1112 IGMP RFC 2236 IGMPv2 RFC 2283 Multiprotocol Extensions for BGP-4 RFC 2362 PIM Sparse Mode RFC 2365 Administratively Scoped IP Multicast RFC 2710 Multicast Listener Discovery (MLD) for IPv6 RFC 2934 Protocol Independent Multicast MIB for IPv4 RFC 3376 IGMPv3 **IPv6** RFC 1981 IPv6 Path MTU Discovery RFC 2080 RIPng for IPv6

Specifications (continued)

	HP A-MSR20-13 W Multi-Service Router (JF808A)	HP A-MSR20-15 A Multi-Service Router (JF237A)	HP A-MSR20-15 AW Multi-Service Router (JF238A)
Standards and protocols (applies to all products in series)	RFC 2373 IPv6 Addressing Architecture RFC 2460 IPv6 Specification RFC 2461 IPv6 Neighbor Discovery RFC 2462 IPv6 Stateless Address Auto-configuration RFC 2463 ICMPv6 RFC 2464 Transmission of IPv6 over Ethernet Networks RFC 2472 IP Version 6 over PPP RFC 2473 Generic Packet Tunneling in IPv6 RFC 2475 IPv6 DiffServ Architecture RFC 2529 Transmission of IPv6 Packets over IPv4 RFC 2545 Use of MP-BGP-4 for IPv6 RFC 2553 Basic Socket Interface Extensions for IPv6 RFC 2740 OSPFv3 for IPv6 RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers RFC 3056 Connection of IPv6 Domains via IPv4 Clouds RFC 3513 IPv6 Addressing Architecture RFC 3596 DNS Extension for IPv6 **MIBs** RFC 1213 MIB II RFC 1229 Interface MIB Extensions RFC 1286 Bridge MIB RFC 1493 Bridge MIB RFC 1573 SNMP MIB II RFC 1724 RIPv2 MIB RFC 1757 Remote Network Monitoring MIB RFC 1850 OSPFv2 MIB RFC 2011 SNMPv2 MIB for IP RFC 2012 SNMPv2 MIB for TCP RFC 2013 SNMPv2 MIB for UDP RFC 2233 Interfaces MIB RFC 2454 IPV6-UDP-MIB RFC 2465 IPv6 MIB RFC 2466 ICMPv6 MIB RFC 2618 RADIUS Client MIB RFC 2620 RADIUS Accounting MIB RFC 2674 802.1p and IEEE 802.1Q Bridge MIB	RFC 2737 Entity MIB (Version 2) RFC 2863 The Interfaces Group MIB RFC 2933 IGMP MIB RFC 3813 MPLS LSR MIB **Network management** IEEE 802.1D (STP) RFC 1155 Structure of Management Information RFC 1157 SNMPv1 RFC 1905 SNMPv2 Protocol Operations RFC 2272 SNMPv3 Management Protocol RFC 2273 SNMPv3 Applications RFC 2274 USM for SNMPv3 RFC 2275 VACM for SNMPv3 RFC 2575 SNMPv3 View-based Access Control Model (VACM) RFC 3164 BSD syslog Protocol **OSPF** RFC 1245 OSPF protocol analysis RFC 1246 Experience with OSPF RFC 1587 OSPF NSSA RFC 1765 OSPF Database Overflow RFC 1850 OSPFv2 Management Information Base (MIB), traps RFC 2328 OSPFv2 RFC 2370 OSPF Opaque LSA Option RFC 3101 OSPF NSSA **QoS/CoS** IEEE 802.1P (CoS) RFC 2474 DS Field in the IPv4 and IPv6 Headers RFC 2475 DiffServ Architecture RFC 2597 DiffServ Assured Forwarding (AF) RFC 2598 DiffServ Expedited Forwarding (EF) RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP **Security**	IEEE 802.1X Port Based Network Access Control RFC 1321 The MD5 Message-Digest Algorithm RFC 2082 RIP-2 MD5 Authentication RFC 2104 Keyed-Hashing for Message Authentication RFC 2138 RADIUS Authentication RFC 2209 RSVP-Message Processing RFC 2246 Transport Layer Security (TLS) RFC 2716 PPP EAP TLS Authentication Protocol RFC 2865 RADIUS Authentication RFC 2866 RADIUS Accounting RFC 3567 Intermediate System (IS) to IS Cryptographic Authentication **VPN** RFC 2403 - HMAC-MD5-96 RFC 2404 - HMAC-SHA1-96 RFC 2405 - DES-CBC Cipher algorithm RFC 2547 BGP/MPLS VPNs RFC 2796 BGP Route Reflection - An Alternative to Full Mesh IBGP RFC 2842 Capabilities Advertisement with BGP-4 RFC 2858 Multiprotocol Extensions for BGP-4 RFC 2918 Route Refresh Capability for BGP-4 RFC 3107 Carrying Label Information in BGP-4 **IPsec** RFC 1828 IP Authentication using Keyed MD5 RFC 2401 IP Security Architecture RFC 2402 IP Authentication Header RFC 2406 IP Encapsulating Security Payload RFC 2407 - Domain of interpretation RFC 2410 - The NULL Encryption Algorithm and its use with IPsec RFC 2411 IP Security Document Roadmap RFC 2412 – OAKLEY RFC 2865 - Remote Authentication Dial In User Service (RADIUS)

Specifications

	HP A-MSR20-15 I Multi-Service Router (JF236A)	HP A-MSR20-15 IW Multi-Service Router (JF809A)	HP A-MSR20-15 Multi-Service Router (JF817A)
Ports	1 SIC slot 1 RJ-45 ADSL2+ port 1 ISDN port 1 RJ-45 auto-sensing 10/100 WAN port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full 4 RJ-45 auto-sensing 10/100 LAN ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full	1 SIC slot 1 RJ-45 ADSL2+ port 1 ISDN port 1 RJ-45 auto-sensing 10/100 WAN port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full 4 RJ-45 auto-sensing 10/100 LAN ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full	1 SIC slot 1 RJ-45 ADSL2+ port 1 RJ-45 auto-sensing 10/100 WAN port (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full 4 RJ-45 auto-sensing 10/100 LAN ports (IEEE 802.3 Type 10Base-T, IEEE 802.3u Type 100Base-TX); Duplex: half or full
AP characteristics			
Radios		Single (b/g)	
Radio operation modes		Client access	
AP operation modes		Autonomous	
Wi-Fi Alliance Certification		b/g Wi-Fi Certified	
Physical characteristics			
Dimensions	9.45(d) x 11.81(w) x 1.74(h) in. (24 x 30 x 4.42 cm)	9.45(d) x 11.81(w) x 1.74(h) in. (24 x 30 x 4.42 cm) (1U height)	9.45(d) x 11.81(w) x 1.74(h) in. (24 x 30 x 4.42 cm)
Weight	6.61 lb. (3.0 kg)	6.61 lb. (3.0 kg)	6.61 lb. (3.0 kg)
Memory and processor			
Processor	RISC @ 333 MHz, 256 MB DDR SDRAM, 32 MB flash	RISC @ 333 MHz, 256 MB DDR SDRAM, 32 MB flash	RISC @ 333 MHz, 256 MB DDR SDRAM, 32 MB flash
Mounting	Desktop or can be mounted in a standard 19-in. rack when used with the optional rack-mount kit.	Desktop or can be mounted in a standard 19-in. rack when used with the optional rack-mount kit.	Desktop or can be mounted in a standard 19-in. rack when used with the optional rack-mount kit.
Performance			
Throughput	up to 160 Kpps (64-byte packets)	up to 160 Kpps (64-byte packets)	up to 160 Kpps (64-byte packets)
Routing table size	10,000 entries	10,000 entries	10,000 entries
Environment			
Operating temperature	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)
Operating relative humidity	5% to 90%, non-condensing	5% to 90%, non-condensing	5% to 90%, non-condensing
Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Non-operating/Storage relative humidity	5% to 90%, non-condensing	5% to 90%, non-condensing	5% to 90%, non-condensing
Electrical characteristics			
Maximum heat dissipation	85 BTU/hr (89.68 kJ/hr)	85 BTU/hr (89.68 kJ/hr)	85 BTU/hr (89.68 kJ/hr)
Voltage	100-120 / 200-240 VAC	100-120 / 200-240 VAC	100-120 / 200-240 VAC
Maximum power rating	25 W	25 W	25 W
Frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Notes	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.	Maximum power rating and maximum heat dissipation are the worst-case theoretical maximum numbers provided for planning the infrastructure with fully loaded PoE (if equipped), 100% traffic, all ports plugged in, and all modules populated.
Safety	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J	UL 60950-1; AS/NZS 60950; EN 60825-1 Safety of Laser Products-Part 1; EN 60825-2 Safety of Laser Products-Part 2; IEC 60950-1; CAN/CSA-C22.2 No. 60950-1-03; EN 60950-1/A11; FDA 21 CFR Subchapter J
Emissions	EN 55022 Class B; ICES-003 Class B; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR22 Class B; FCC (CFR 47, Part 15) Class B	EN 55022 Class B; ICES-003 Class B; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR22 Class B; FCC (CFR 47, Part 15) Class B	EN 55022 Class B; ICES-003 Class B; ANSI C63.4 2003; ETSI EN 300 386 V1.3.3; EN 61000-4-2; EN 61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-3-2:2006; EN 61000-3-3:1995 +A1:2001+A2:2005; EMC Directive 2004/108/EC; EN 55024:1998+ A1:2001 + A2:2003; EN 61000-4-11:2004; EN 61000-4-8:2001; AS/NZS CISPR22 Class B; FCC (CFR 47, Part 15) Class B
Telecom			
	FCC part 68	FCC part 68	FCC part 68

Specifications (continued)

	HP A-MSR20-15 I Multi-Service Router (JF236A)	HP A-MSR20-15 IW Multi-Service Router (JF809A)	HP A-MSR20-15 Multi-Service Router (JF817A)
Management	IMC - Intelligent Management Center; command-line interface; Web browser; out-of-band management (serial RS-232C); out-of-band management (DB-9 serial port console); SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; command-line interface; Web browser; out-of-band management (serial RS-232C); out-of-band management (DB-9 serial port console); SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB	IMC - Intelligent Management Center; command-line interface; Web browser; out-of-band management (serial RS-232C); out-of-band management (DB-9 serial port console); SNMP Manager; Telnet; RMON1; FTP; IEEE 802.3 Ethernet MIB
Notes	Height does not include antennas on wireless models; weight is with no optional modules installed.	Height does not include antennas on wireless models; weight is with no optional modules installed.	Height does not include antennas on wireless models; weight is with no optional modules installed.
Services	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.	3-year, parts only, global next-day advance exchange (UW075E) 3-year, 4-hour onsite, 13x5 coverage for hardware (UW076E) 3-year, 4-hour onsite, 24x7 coverage for hardware (UW006E) 3-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone support (UW009E) 3-year, 24x7 SW phone support, software updates (UW012E) 4-year, 4-hour onsite, 13x5 coverage for hardware (UW077E) 4-year, 4-hour onsite, 24x7 coverage for hardware (UW007E) 4-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW010E) 4-year, 24x7 SW phone support, software updates (UW013E) 5-year, 4-hour onsite, 13x5 coverage for hardware (UW078E) 5-year, 4-hour onsite, 24x7 coverage for hardware (UW008E) 5-year, 4-hour onsite, 24x7 coverage for hardware, 24x7 software phone (UW011E) 5-year, 24x7 SW phone support, software updates (UW014E) 3 Yr 6 hr Call-to-Repair Onsite (UW079E) 4 Yr 6 hr Call-to-Repair Onsite (UW080E) 5 Yr 6 hr Call-to-Repair Onsite (UW081E) Refer to the HP website at www.hp.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local HP sales office.

Specifications (continued)

	HP A-MSR20-15 I Multi-Service Router (JF236A)	HP A-MSR20-15 IW Multi-Service Router (JF809A)	HP A-MSR20-15 Multi-Service Router (JF817A)
Standards and protocols (applies to all products in series)	**BGP** RFC 1163 Border Gateway Protocol (BGP) RFC 1267 Border Gateway Protocol 3 (BGP-3) RFC 1657 Definitions of Managed Objects for BGPv4 RFC 1771 BGPv4 RFC 1772 Application of the BGP RFC 1773 Experience with the BGP-4 Protocol RFC 1774 BGP-4 Protocol Analysis RFC 1965 BGP4 confederations RFC 1997 BGP Communities Attribute RFC 1998 PPP Gandalf FZA Compression Protocol RFC 2385 BGP Session Protection via TCP MD5 RFC 2439 BGP Route Flap Damping **Device management** RFC 1305 NTPv3 RFC 1945 Hypertext Transfer Protocol – HTTP/1.0 RFC 2271 FrameWork RFC 2452 MIB for TCP6 RFC 2454 MIB for UDP6 **General protocols** IEEE 802.1D MAC Bridges IEEE 802.1p Priority IEEE 802.1Q VLANs IEEE 802.1s Multiple Spanning Trees IEEE 802.1w Rapid Reconfiguration of Spanning Tree RFC 768 UDP RFC 783 TFTP Protocol (revision 2) RFC 791 IP RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 854 TELNET RFC 855 Telnet Option Specification RFC 856 TELNET RFC 858 Telnet Suppress Go Ahead Option RFC 894 IP over Ethernet RFC 925 Multi-LAN Address Resolution RFC 950 Internet Standard Subnetting Procedure RFC 959 File Transfer Protocol (FTP) RFC 1006 ISO transport services on top of the TCP: Version 3 RFC 1027 Proxy ARP RFC 1034 Domain Concepts and Facilities RFC 1035 Domain Implementation and Specification RFC 1042 IP Datagrams RFC 1058 RIPv1 RFC 1071 Computing the Internet Checksum RFC 1091 Telnet Terminal-Type Option RFC 1122 Host Requirements RFC 1141 Incremental updating of the Internet checksum RFC 1142 OSI IS-IS Intra-domain Routing Protocol RFC 1144 Compressing TCP/IP headers for low-speed serial links RFC 1195 OSI ISIS for IP and Dual Environments RFC 1256 ICMP Router Discovery Protocol (IRDP) RFC 1293 Inverse Address Resolution Protocol RFC 1315 Management Information Base for Frame Relay DTEs RFC 1332 The PPP Internet Protocol Control Protocol (IPCP) RFC 1333 PPP Link Quality Monitoring RFC 1334 PPP Authentication Protocols (PAP) RFC 1349 Type of Service RFC 1350 TFTP Protocol (revision 2) RFC 1377 The PPP OSI Network Layer Control Protocol (OSINLCP) RFC 1381 SNMP MIB Extension for X.25 LAPB RFC 1471 The Definitions of Managed Objects for the Link Control Protocol of the Point-to-Point Protocol RFC 1472 The Definitions of Managed Objects	for the Security Protocols of the Point-to-Point Protocol RFC 1490 Multiprotocol Interconnect over Frame Relay RFC 1519 CIDR RFC 1534 DHCP/BOOTP Interoperation RFC 1542 Clarifications and Extensions for the Bootstrap Protocol RFC 1552 The PPP Internetworking Packet Exchange Control Protocol (IPXCP) RFC 1577 Classical IP and ARP over ATM RFC 1613 Cisco Systems X.25 over TCP (XOT) RFC 1624 Incremental Internet Checksum RFC 1631 NAT RFC 1638 PPP Bridging Control Protocol (BCP) RFC 1661 The Point-to-Point Protocol (PPP) RFC 1662 PPP in HDLC-like Framing RFC 1695 Definitions of Managed Objects for ATM Management Version 8.0 using SMIv2 RFC 1701 Generic Routing Encapsulation RFC 1702 Generic Routing Encapsulation over IPv4 networks RFC 1721 RIP-2 Analysis RFC 1722 RIP-2 Applicability RFC 1723 RIP v2 RFC 1795 Data Link Switching: Switch-to-Switch Protocol AIW DLSw RIG: DLSw Closed Pages, DLSw Standard Version 1 RFC 1812 IPv4 Routing RFC 1829 The ESP DES-CBC Transform RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses RFC 1944 Benchmarking Methodology for Network Interconnect Devices RFC 1973 PPP in Frame Relay RFC 1974 PPP Stac LZS Compression Protocol RFC 1990 The PPP Multilink Protocol (MP) RFC 1994 PPP Challenge Handshake Authentication Protocol (CHAP) RFC 2091 Trigger RIP RFC 2131 DHCP RFC 2132 DHCP Options and BOOTP Vendor Extensions RFC 2166 APPN Implementer's Workshop Closed Pages Document DLSw v2.0 Enhancements RFC 2205 Resource ReSerVation Protocol (RSVP) - Version 1 Functional Specification RFC 2280 Routing Policy Specification Language (RPSL) RFC 2284 EAP over LAN RFC 2338 VRRP RFC 2364 PPP Over AAL5 RFC 2374 An Aggregatable Global Unicast Address Format RFC 2451 The ESP CBC-Mode Cipher Algorithms RFC 2453 RIPv2 RFC 2510 Internet X.509 Public Key Infrastructure Certificate Management Protocols RFC 2511 Internet X.509 Certificate Request Message Format RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE) RFC 2644 Directed Broadcast Control RFC 2661 L2TP RFC 2663 NAT Terminology and Considerations RFC 2684 Multiprotocol Encapsulation over ATM Adaptation Layer 5 RFC 2694 DNS extensions to Network Address Translators (DNS_ALG) RFC 2702 Requirements for Traffic Engineering Over MPLS RFC 2747 RSVP Cryptographic Authentication RFC 2763 Dynamic Name-to-System ID mapping support RFC 2765 Stateless IP/ICMP Translation Algorithm (SIIT) RFC 2766 Network Address Translation - Protocol	Translation (NAT-PT) RFC 2784 Generic Routing Encapsulation (GRE) RFC 2787 Definitions of Managed Objects for VRRP RFC 2961 RSVP Refresh Overhead Reduction Extensions RFC 2966 Domain-wide Prefix Distribution with Two-Level IS-IS RFC 2973 IS-IS Mesh Groups RFC 2993 Architectural Implications of NAT RFC 3022 Traditional IP Network Address Translator (Traditional NAT) RFC 3027 Protocol Complications with the IP Network Address Translator RFC 3031 Multiprotocol Label Switching Architecture RFC 3032 MPLS Label Stack Encoding RFC 3036 LDP Specification RFC 3046 DHCP Relay Agent Information Option RFC 3063 MPLS Loop Prevention Mechanism RFC 3065 Support AS confederation RFC 3137 OSPF Stub Router Advertisement RFC 3209 RSVP-TE Extensions to RSVP for LSP Tunnels RFC 3210 Applicability Statement for Extensions to RSVP for LSP-Tunnels RFC 3212 Constraint-Based LSP setup using LDP (CR-LDP) RFC 3214 LSP Modification Using CR-LDP RFC 3215 LDP State Machine RFC 3268 Advanced Encryption Standard (AES) Ciphersuites for Transport Layer Security (TLS) RFC 3277 IS-IS Transient Blackhole Avoidance RFC 3279 Algorithms and Identifiers for the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile RFC 3280 Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile RFC 3392 Support BGP capabilities advertisement RFC 3479 Fault Tolerance for the Label Distribution Protocol (LDP) RFC 3564 Requirements for Support of Differentiated Services-aware MPLS Traffic Engineering RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec RFC 3706 A Traffic-Based Method of Detecting Dead Internet Key Exchange (IKE) Peers RFC 3784 ISIS TE support RFC 3786 Extending the Number of IS-IS LSP Fragments Beyond the 256 Limit RFC 3811 Definitions of Textual Conventions (TCs) for Multiprotocol Label Switching (MPLS) Management RFC 3812 Multiprotocol Label Switching (MPLS) Traffic Engineering (TE) Management Information Base (MIB) RFC 3847 Restart signaling for IS-IS **IP multicast** RFC 1112 IGMP RFC 2236 IGMPv2 RFC 2283 Multiprotocol Extensions for BGP-4 RFC 2362 PIM Sparse Mode RFC 2365 Administratively Scoped IP Multicast RFC 2710 Multicast Listener Discovery (MLD) for IPv6 RFC 2934 Protocol Independent Multicast MIB for IPv4 RFC 3376 IGMPv3 **IPv6** RFC 1981 IPv6 Path MTU Discovery RFC 2080 RIPng for IPv6 RFC 2292 Advanced Sockets API for IPv6

Specifications (continued)

	HP A-MSR20-15 I Multi-Service Router (JF236A)	HP A-MSR20-15 IW Multi-Service Router (JF809A)	HP A-MSR20-15 Multi-Service Router (JF817A)
Standards and protocols (applies to all products in series)	RFC 2461 IPv6 Neighbor Discovery RFC 2462 IPv6 Stateless Address Auto-configuration RFC 2463 ICMPv6 RFC 2464 Transmission of IPv6 over Ethernet Networks RFC 2472 IP Version 6 over PPP RFC 2473 Generic Packet Tunneling in IPv6 RFC 2475 IPv6 DiffServ Architecture RFC 2529 Transmission of IPv6 Packets over IPv4 RFC 2545 Use of MP-BGP-4 for IPv6 RFC 2553 Basic Socket Interface Extensions for IPv6 RFC 2740 OSPFv3 for IPv6 RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers RFC 3056 Connection of IPv6 Domains via IPv4 Clouds RFC 3513 IPv6 Addressing Architecture RFC 3596 DNS Extension for IPv6 **MIBs** RFC 1213 MIB II RFC 1229 Interface MIB Extensions RFC 1286 Bridge MIB RFC 1493 Bridge MIB RFC 1573 SNMP MIB II RFC 1724 RIPv2 MIB RFC 1757 Remote Network Monitoring MIB RFC 1850 OSPFv2 MIB RFC 2011 SNMPv2 MIB for IP RFC 2012 SNMPv2 MIB for TCP RFC 2013 SNMPv2 MIB for UDP RFC 2233 Interfaces MIB RFC 2454 IPV6-UDP-MIB RFC 2465 IPv6 MIB RFC 2466 ICMPv6 MIB RFC 2618 RADIUS Client MIB RFC 2620 RADIUS Accounting MIB RFC 2674 802.1p and IEEE 802.1Q Bridge MIB RFC 2737 Entity MIB (Version 2)	RFC 2863 The Interfaces Group MIB RFC 2933 IGMP MIB RFC 3813 MPLS LSR MIB **Network management** IEEE 802.1D (STP) RFC 1155 Structure of Management Information RFC 1157 SNMPv1 RFC 1905 SNMPv2 Protocol Operations RFC 2272 SNMPv3 Management Protocol RFC 2273 SNMPv3 Applications RFC 2274 USM for SNMPv3 RFC 2275 VACM for SNMPv3 RFC 2575 SNMPv3 View-based Access Control Model (VACM) RFC 3164 BSD syslog Protocol **OSPF** RFC 1245 OSPF protocol analysis RFC 1246 Experience with OSPF RFC 1587 OSPF NSSA RFC 1765 OSPF Database Overflow RFC 1850 OSPFv2 Management Information Base (MIB), traps RFC 2328 OSPFv2 RFC 2370 OSPF Opaque LSA Option RFC 3101 OSPF NSSA **QoS/CoS** IEEE 802.1P (CoS) RFC 2474 DS Field in the IPv4 and IPv6 Headers RFC 2475 DiffServ Architecture RFC 2597 DiffServ Assured Forwarding (AF) RFC 2598 DiffServ Expedited Forwarding (EF) RFC 3168 The Addition of Explicit Congestion Notification (ECN) to IP **Security**	IEEE 802.1X Port Based Network Access Control RFC 1321 The MD5 Message-Digest Algorithm RFC 2082 RIP-2 MD5 Authentication RFC 2104 Keyed-Hashing for Message Authentication RFC 2138 RADIUS Authentication RFC 2209 RSVP-Message Processing RFC 2246 Transport Layer Security (TLS) RFC 2716 PPP EAP TLS Authentication Protocol RFC 2865 RADIUS Authentication RFC 2866 RADIUS Accounting RFC 3567 Intermediate System (IS) to IS Cryptographic Authentication **VPN** RFC 2403 - HMAC-MD5-96 RFC 2404 - HMAC-SHA1-96 RFC 2405 - DES-CBC Cipher algorithm RFC 2547 BGP/MPLS VPNs RFC 2796 BGP Route Reflection - An Alternative to Full Mesh IBGP RFC 2842 Capabilities Advertisement with BGP-4 RFC 2858 Multiprotocol Extensions for BGP-4 RFC 2918 Route Refresh Capability for BGP-4 RFC 3107 Carrying Label Information in BGP-4 **IPsec** RFC 1828 IP Authentication using Keyed MD5 RFC 2401 IP Security Architecture RFC 2402 IP Authentication Header RFC 2406 IP Encapsulating Security Payload RFC 2407 - Domain of interpretation RFC 2410 - The NULL Encryption Algorithm and its use with IPsec RFC 2411 IP Security Document Roadmap RFC 2412 – OAKLEY RFC 2865 - Remote Authentication Dial In User Service (RADIUS)

HP A-MSR20-1x Series accessories

Transceivers

HP X110 100M SFP LC FX Transceiver (JD102B)
HP X110 100M SFP LC LX Transceiver (JD120B)
HP X110 100M SFP LC LH40 Transceiver (JD090A)
HP X110 100M SFP LC LH80 Transceiver (JD091A)
HP X125 1G SFP LC SX Transceiver (JD118B)
HP X120 1G SFP LC LX Transceiver (JD119B)
HP X124 1G SFP LC LH40 1310nm Transceiver (JD061A)
HP X120 1G SFP LC LH40 1550nm Transceiver (JD062A)
HP X125 1G SFP LC LH70 Transceiver (JD063B)

Cables

HP X200 V.24 DTE 3m Serial Port Cable (JD519A)
HP X200 V.24 DCE 3m Serial Port Cable (JD521A)
HP X200 V.35 DTE 3m Serial Port Cable (JD523A)
HP X200 V.35 DCE 3m Serial Port Cable (JD525A)
HP X200 X.21 DTE 3m Serial Port Cable (JD527A)
HP X200 X.21 DCE 3m Serial Port Cable (JD529A)
HP X260 RS449 3m DTE Serial Port Cable (JF825A)
HP X260 RS449 3m DCE Serial Port Cable (JF826A)
HP X260 RS530 3m DTE Serial Port Cable (JF827A)
HP X260 RS530 3m DCE Serial Port Cable (JF828A)
HP X260 Auxiliary Router Cable (JD508A)
HP X260 E1 RJ45 3m Router Cable (JD509A)
HP X260 E1 BNC 75 ohm 40m Router Cable (JD516A)
HP X260 E1 BNC 75 ohm 3m Router Cable (JD175A)
HP X260 E1 BNC 20m Router Cable (JD514A)
HP X260 E1 RJ45 BNC 75-120 ohm Conversion Router Cable (JD511A)
HP X260 2E1 BNC 3m Router Cable (JD643A)
HP X260 T1 Voice Router Cable (JD535A)
HP X260 T1 Router Cable (JD518A)
HP X260 SIC-8AS RJ45 0.28m Router Cable (JD642A)
HP X260 E1 RJ45 20m Router Cable (JD517A)
HP X260 T1VI DB15M RJ45 3m Router Cable (JF843A)

Router Modules

HP 9-port 10/100 DSIC A-MSR Module (JD574B)
HP 4-port 10/100 SIC A-MSR Module (JD573B)
HP 1-port 10/100/1000 SIC A-MSR Module (JD572A)
HP 1-port 10/100 SIC A-MSR Module (JD545B)
HP 1-port 100Mbt SFP SIC Router Module (JF280A)
HP 2-port FXO SIC A-MSR Module (JD558A)
HP 1-port FXO SIC A-MSR Module (JD559A)
HP 2-port FXS SIC A-MSR Module (JD560A)
HP 1-port FXS SIC A-MSR Module (JD561A)
HP 2FXS+1FXO Voice Interface SIC A-MSR Module (JD632A)
HP 2-port ISDN-S/T Voice Interface SIC Module (JF821A)
HP 1-port Analog Modem SIC A-MSR Module (JD536A)
HP 1-port ADSL2+ SIC A-MSR Module (JD537A)
HP 1-port Fractional SIC A-MSR Module (JD538A)
HP 1-port Enhanced Serial SIC A-MSR Module (JD557A)
HP 1-port ISDN-U SIC A-MSR Module (JD570A)
HP 1-port ISDN-S/T SIC A-MSR Module (JD571A)
HP 1-Port Fractional E1 SIC A-MSR Module (JD634B)
HP 8-port Asynchronous Serial SIC Module (JF281A)
HP 802.11b/g/n Wireless Access Point SIC Module (JF819A)
HP 3G Wireless GSM/WCDMA WAN SIC Module (JF820A)
HP 2-port Fractional E1 SIC A-MSR Module (JF842A)

HP A-MSR20-12 Multi-Service Router (JF241A)

HP 1-port E1-Voice SIC A-MSR Module (JD575A)
HP 1-port T1-Voice SIC A-MSR Module (JD576A)
HP 32-Channel Voice Processor A-MSR Module (JD598A)
HP 24-Channel Voice Processor A-MSR Module (JD599A)
HP 16-Channel Voice Processor A-MSR Module (JD600A)
HP 8-Channel Voice Processor A-MSR Module (JD601A)
HP Voice Co-Processor Module A-MSR Module (JD610A)

HP A-MSR20-12 W Multi-Service Router (JF807A)

HP 1-port E1-Voice SIC A-MSR Module (JD575A)
HP 1-port T1-Voice SIC A-MSR Module (JD576A)
HP 32-Channel Voice Processor A-MSR Module (JD598A)
HP 24-Channel Voice Processor A-MSR Module (JD599A)
HP 16-Channel Voice Processor A-MSR Module (JD600A)
HP 8-Channel Voice Processor A-MSR Module (JD601A)
HP Voice Co-Processor Module A-MSR Module (JD610A)

HP A-MSR20-12 T1 Multi-Service Router (JF806A)

HP 1-port E1-Voice SIC A-MSR Module (JD575A)
HP 1-port T1-Voice SIC A-MSR Module (JD576A)
HP 32-Channel Voice Processor A-MSR Module (JD598A)
HP 24-Channel Voice Processor A-MSR Module (JD599A)
HP 16-Channel Voice Processor A-MSR Module (JD600A)
HP 8-Channel Voice Processor A-MSR Module (JD601A)
HP Voice Co-Processor Module A-MSR Module (JD610A)

HP A-MSR20-15 A Multi-Service Router (JF237A)

HP 1-port E1-Voice SIC A-MSR Module (JD575A)
HP 1-port T1-Voice SIC A-MSR Module (JD576A)
HP 32-Channel Voice Processor A-MSR Module (JD598A)
HP 24-Channel Voice Processor A-MSR Module (JD599A)
HP 16-Channel Voice Processor A-MSR Module (JD600A)
HP 8-Channel Voice Processor A-MSR Module (JD601A)
HP Voice Co-Processor Module A-MSR Module (JD610A)

HP A-MSR20-1x Series accessories (continued)

HP A-MSR20-15 AW Multi-Service Router (JF238A)

HP 1-port E1-Voice SIC A-MSR Module (JD575A)
HP 1-port T1-Voice SIC A-MSR Module (JD576A)
HP 32-Channel Voice Processor A-MSR Module (JD598A)
HP 24-Channel Voice Processor A-MSR Module (JD599A)
HP 16-Channel Voice Processor A-MSR Module (JD600A)
HP 8-Channel Voice Processor A-MSR Module (JD601A)
HP Voice Co-Processor Module A-MSR Module (JD610A)

HP A-MSR20-15 I Multi-Service Router (JF236A)

HP 1-port E1-Voice SIC A-MSR Module (JD575A)
HP 1-port T1-Voice SIC A-MSR Module (JD576A)
HP 32-Channel Voice Processor A-MSR Module (JD598A)
HP 24-Channel Voice Processor A-MSR Module (JD599A)
HP 16-Channel Voice Processor A-MSR Module (JD600A)
HP 8-Channel Voice Processor A-MSR Module (JD601A)
HP Voice Co-Processor Module A-MSR Module (JD610A)

HP A-MSR20-15 IW Multi-Service Router (JF809A)

HP 1-port E1-Voice SIC A-MSR Module (JD575A)
HP 1-port T1-Voice SIC A-MSR Module (JD576A)
HP 32-Channel Voice Processor A-MSR Module (JD598A)
HP 24-Channel Voice Processor A-MSR Module (JD599A)
HP 16-Channel Voice Processor A-MSR Module (JD600A)
HP 8-Channel Voice Processor A-MSR Module (JD601A)
HP Voice Co-Processor Module A-MSR Module (JD610A)

HP A-MSR20-15 Multi-Service Router (JF817A)

HP 1-port E1-Voice SIC A-MSR Module (JD575A)
HP 1-port T1-Voice SIC A-MSR Module (JD576A)
HP 32-Channel Voice Processor A-MSR Module (JD598A)
HP 24-Channel Voice Processor A-MSR Module (JD599A)
HP 16-Channel Voice Processor A-MSR Module (JD600A)
HP 8-Channel Voice Processor A-MSR Module (JD601A)
HP Voice Co-Processor Module A-MSR Module (JD610A)

HP access points and access devices are Wi-Fi Certified, providing our customers with the assurance that these products have met and passed the rigorous interoperability testing preformed by the Wi-Fi Alliance Organization. See the Specifications section of this series for more information.

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